

## ASCERTAINING DEVIANT BEHAVIOR IN CHILDREN<sup>1</sup>

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A central problem in the use of children's behavior inventories involves the verity of endorsements made by reporters. Procedures for constructing, administering, and scoring a deviant behavior inventory (DBI) were developed so as to minimize and control over and underreporting error: (a) comprehensiveness of coverage, (b) a Not Sure response category, (c) a re-sort procedure and (d) 5 reporters, were designed to minimize false negatives; while (e) clarity and specificity of wording, (f) a detailed inquiry and (g) independent validity judgments were designed to control false positives. In 20 DBI assessments of school children a considerable amount of both types of error was demonstrable when measured against the independent validity judgments, suggesting caution in the use of similar behavioral assessments which as a rule neglect to control for such error.

Deviant behavior lists or symptom inventories have been used in various types of research projects over the last three decades. Ackerson (1942), in his extensive examination of behavior problems among grammar school children in Chicago, is usually credited with the first modern, systematic use of a behavior inventory. Currently there are at least three large-scale projects in process which employ a behavior inventory as the major research instrument—Dreger (1964), Lapouse (1965), and the project described in this paper. Some of the varied uses of behavior inventories include large-scale epidemiological surveys (Lapouse, 1965; Macfarlane, Allen, & Honzik, 1954); empirical classifications of childhood pathology using a factor analysis approach (Becker, 1960; Dreger, Lewis, Rich, Miller, Reid, Overlade, Taffel, & Fleming, 1964); studies using symptom inventories as a measure of personality change (Raush, Dittman, & Taylor, 1959); investigations of parent-child interactions (Becker & Krug, 1964); and studies relating childhood pathology with other internal or external variables such as

social class (Eron, 1964), juvenile delinquency (Stott, 1960), school adjustment (Glidewell, Gildea, Domke, & Kantor, 1959), sex and age (Beller & Neubauer, 1962), and degree of sickness (Glidewell, Mensh, & Gildea, 1957).

These inventories consist of items of "behaviors" or observable acts that are confidently comprehensible to any acculturated observer. The assessment of the clinical significance of the acts is a complex matter, which is discussed elsewhere (Rosenfeld, 1965). But the *presence* of these observable and confidently comprehensible acts could be reliably ascertained by acculturated observers and their reports could be taken as scientifically valid data, safely disregarding the epistemological issue of their "reality." Ideally, one would use trained observers to make repeated and lengthy observations of the child's behavior through a 24-hour cycle, though any practical implementation of even this ideal method would raise some questions of validity such as the effects of the observer on the observed (Barker, 1963, p. 16).

However, data on the child's behavior is seldom obtained from trained observers assigned to the task of systematic observation. For obvious practical reasons information is obtained from reporters who have an opportunity to observe the child and, when asked, are likely to know whether or not the child acts in a manner described by the inventory item. The use of reporters as substitutes for trained observers raises a serious methodologi-

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cal issue of the congruence between the reporter's statement and the statement which would hypothetically be obtained by the ideal trained observer.

The importance of this problem is highlighted by recent work in other areas of psychology relating to bias in reporting behavior, such as the many studies on response bias (see, for example, McGee, 1962) and especially the work of Robbins (1963) and Yarrow (1963) on distortions in parental recall of children's behavior. Yet, despite the widespread and varied use of behavior inventories, there has been relatively little attention given to the issue of overreporting and underreporting error. In general, most of the studies listed above have considered Yes or No choices by a single respondent (usually the mother) checking lists of deviant behavior as accurate research data.

Some investigators circumvent the issue by suggesting that it does not make any difference whether item endorsement reflects actual deviant behavior on the part of the child or parental bias in reporting deviancy: the parents' description is considered relevant on face value since it represents the way in which the child is labeled and treated. This is a position which covers up the problem and is in itself a far-reaching assumption which bears further investigation. (For further discussion, see Eron, 1964, p. 67.)

A few investigators approach the verity issue by examining various consistency measures. Some have calculated the consistency (or retest reliability) of behavior list endorsement over time (Dreger, 1964; Glidewell et al., 1959; Lapouse & Monk, 1959). Others have reported intersource agreement on endorsed items (Becker, 1960; Dreger, 1964; Glidewell et al., 1959; Lapouse & Monk, 1959; Levitt, 1959; Peterson, 1961). Intersource agreements ranged from 36% between parents (Dreger et al., 1964) to 86% between social workers and teachers (Gildea, Glidewell, & Kantor, 1961). Reported consistency figures are, in general, higher than intersource agreement figures. For example, Dreger et al. (1964) find 87% retest agreement for mother respondents. It is apparent, however, that all of these findings are only peripherally related to the issue of accuracy or verity of parental

report. High consistency over time may reflect consistent bias rather than valid endorsement. Low consistency may be due to real variability of the behavior over time rather than invalid endorsement. Similarly, high intersource agreement may represent a shared bias rather than valid endorsement, and low intersource agreement may be due to true situational variability in behavior rather than invalid endorsement (Becker, 1960; Novick, Rosenfeld, & Bloch, in press).

Thus the verity of report remains a central issue in the use of behavior inventories and, despite its inherent difficulties, the problem of invalid parental report warrants an investigation into ways of decreasing both negative and positive distortions in the endorsement of children's deviant behavior. The following study deals with the use of a deviant behavior inventory in assessing childhood pathology with special attention given to the methodological issue of valid endorsement. Postulating that a single reporter's Yes and No endorsement is not trustworthy, the investigators sought to devise data collection and scoring procedures which, although relying in part on such endorsements, would yield independent judgments of the presence of listed behaviors, based on many sources. Once such maximally accurate (valid) data were available it would be possible to make comparisons between them and data based on single respondents' Yes and No endorsements, thus simultaneously obtaining measures of underreporting (false negative) and overreporting (false positive) error. Since the independent judgments were in part based on reporters' endorsements, and also in order to make this a fair comparison, various procedures were introduced to minimize the chance of false Yes and No endorsements by single reporters. These procedures helped also to maximize the accuracy of the independent "valid" judgments.

## METHOD

### *Instrument Construction, Data Collection, and Scoring*

The following principles of instrument construction were observed in the formalization of the Deviant Behavior Inventory (DBI).

An incomplete list of deviant behaviors increases

the probability of false negatives or failure to note the presence of existing deviant behavior. Current symptom lists range from 17 items (Glidewell et al., 1957) to 337 items (Thetford, 1952). Pertinent writings on childhood pathology and other available symptom lists guided the writing of a preliminary deviant behavior checklist which was then administered to 12 parents of clinic and nonclinic children, 7 experienced clinical consultants, and a group of settlement workers in a low-income project. A direct interview and a general inquiry were used to elicit additional items of deviant behavior. These procedures were continued until respondents were unable to add new items. Although far from perfect, the present instrument compares favorably with other available lists of deviant behaviors of latency children. The final DBI contains 237 items of deviant behavior such as (Item 6) *Has poor appetite—can't eat or just nibbles at food*; (Item 9) *Has frightening dreams or nightmares*; (Item 23) *Makes bowel movement in bed or pants*; (Item 52) *Bites fingernails*; (Item 179) *Has taken money that does not belong to him*; and covers such areas as the physical system, speech, thought, affects, self-feeling, peer and adult relations, discipline, competition, sexual behaviors, and fears. Specific physical impairments and scholastic performance are intentionally omitted from the present list since they can be more validly assessed by means of a medical report and school records. The earlier version of our instrument included positive items, but it was found that the inclusion of these items was inefficient and confusing, and the positive items were deleted.

Another source of false endorsement is misinterpretation of item due to a high reading level or ambiguity or due to the fact that the item requires judgment of a highly abstract or evaluative nature. Our own survey of existing symptom lists and that done by Dreger et al. (1964) indicate that the majority of such lists are replete with ambiguous, high-reading-level and highly abstract items. All pretest respondents as well as a group of 60 students in a school of education were asked to check those items which seemed ambiguous or unclear. Items so checked were rewritten.

Other sources of erroneous endorsement derive from the method of administration of the inventory. The printed questionnaire form with provisions for Yes or No checks induces fatigue, error, and response sets such as acquiescence and denial. The relationship between this unvaried, tedious format and unreliability has been pointed out by a number of authors (e.g., Hambelin & Vanderplas, 1961). A flash-card method of item presentation is used with the DBI. Each item is typed on individual cards which the respondents sort into several categories. In the form of a card sort each item seems better isolated from the rest of the list, and the physical act of handling and sorting the cards increases the respondent's interest and involvement in the task.

The usual method of using only two response categories, Yes and No, has certain statistical advantages, but by forcing the respondent to check Yes and No

on items about which he is uncertain one increases the likelihood of both false positives and false negatives. Furthermore, the Yes and No categories may yield double negatives. Instead, True and False categories were used and a third Not Sure category was added to present respondents with an opportunity to endorse an item without feeling that they were indicting, misrepresenting, or exaggerating the difficulties of the child.

Lack of a clearly specified time referent in the instructions leads to both variability between respondents and erroneous endorsement. For this reason, reporters were instructed to put into True or Not Sure only those items that occurred within the last 6 months.

Lack of a procedure for self-correction of endorsements preserves a certain number of false endorsements which are probably due to simple mechanical mistakes. To avoid this, a partial re-sort was built into the sort procedures. After completion of the initial sort the respondent is immediately told to re-sort all the items he put into the False category. Three re-sort categories are used: False to True for items mistakenly omitted on initial sort or subsequently recalled; False Now, Used To Be True for items which were present prior to the assessment period but are seen by the respondent as having disappeared; and False to False for those items still considered False at re-sort.

The reliance on one reporter (even as well informed as a mother usually is) fails to assure adequate coverage of the child's deviancies. This study used five independent sources of information: the mother, the father, the teacher, and trained home and school observers.

Various personality factors in the respondent may lead him to misperceive or misinterpret a child's behavior. These factors may range from such benign characteristics as ignorance or misinformation to psychotic denial and distortion. In order to eliminate endorsements based on hearsay, inference, or misperception of the child's behavior, a focused inquiry is used to obtain the behavioral evidence for each endorsement. Following the sort and re-sort, an inquiry is made for each item sorted as True or Not Sure, or re-sorted as False to True or False Now, Used To Be True, to obtain information as to the intensity, frequency, pervasiveness, chronicity and to elicit a detailed example of the behavior.

After the data have been gathered and the detailed inquiries and observations compiled, all the available evidence for each item is judged for presence of deviancy by three members of the research team. Thus, for each item endorsed by any respondent, there was an independent judgment of whether the endorsement was valid (i.e., seeming to reflect actual deviant behavior on the part of the child) or invalid (i.e., seeming to reflect a misperception or bias on the part of the respondent). The criteria of presence of deviancy were (a) whether the example of the child's behavior conformed to the written item and (b) whether the intensity, frequency, and pervasiveness were considered deviant by the three ac-

cultured, clinically trained judges. It should be noted that judgment was based only on the elicited information and observations and not on the category of endorsement, the number of endorsements or who endorsed an item.

### *Sample and Procedures*

The above procedures were used in a study of 10 latency aged children seen for treatment at the Madeleine Borg Child Guidance Institute, assessed at intake and again 1 year later. Families were white, middle class, and considered representative of families seeking assistance from child guidance centers. The DBI was administered to the mother, the father, and a teacher of each child. Using the DBI as an observational guide, a home and a school observation were also made. The home observation lasted approximately 3 hours, covering a period prior to the evening meal and continuing until the child had gone to bed. The school observation covered two academic periods and one period of free play. All observations of deviant behavior were recorded in detail under the appropriate item of the DBI. Independent judgments were made by three members of the research team on a total of 1,566 items picked as present by at least one respondent. There was a 96.0% complete agreement and 4.0% two-way agreement among the three judges.

Prior to DBI assessment a routine 2- to 3-hour intake interview with each family (mother, father, and child) was conducted and made available by the agency social worker. Since the intake interview is designed in part to elicit presenting symptoms, all symptom or deviant behavior information thus obtained was translated into appropriate DBI items and recorded separately to allow comparisons with DBI data.

### RESULTS

Since differences between DBI measures at the two points in time are not pertinent to issues discussed here, the data are treated as 20 homogeneous assessments rather than as 10 initial and 10 repeated assessments. The results divide into two sections, one dealing with false negative and the other with false positive error.

### *False Negatives*

The advantage of using a comprehensive deviant behavior inventory is indicated in Table 1 in the comparison of the amount of information obtained by the use of a routine intake interview with the amount of information obtained by administering the DBI to the mother alone or with the total DBI information obtained from the five informants. Though this comparison is somewhat unfair since the primary purpose of the intake interview is to establish etiology, dynamics, and a plan for treatment, the argument is sometimes made that sufficient behavioral data become available through this means. The intake interview is unquestionably less time consuming and has been used in many studies as the major source of information on the patient's symptom picture (e.g., Beller & Neubauer, 1964; Eitzman, 1954; Menninger, 1952). By inspection of Table 1, it may be seen that the mother alone gave four to eight times as much information using the DBI as was obtained by the intake interview with both parents and the child, and that the intake procedure provided only 17% of the total items of pathology obtained by the research team utilizing all five sources of information.

The limitation of using only one informant is evident in the finding that the mothers, although the best single source of information, gave on the average only 63.2% of the total 1,566 items of deviant behavior obtained from all sources (Table 1). Even the most informative mother missed 12% of the items obtained from the total assessment and one mother missed as much as 67%.

The effectiveness of the Not Sure category in increasing the yield of our assessment and

TABLE 1  
ITEM SELECTION BY THE FIVE SOURCES AND FROM INTAKE INTERVIEW

	Mother	Father	Teacher	Home observer	School observer	Total <sup>a</sup>	Intake
Mean number	49.5	42.8	17.4	11.2	9.6	78.3	13.2
Percentage of total	63.2	54.7	22.2	13.7	11.7	—	16.7
Median percentage of total	63.3	53.8	23.0	14.0	14.4	—	14.9
Percentage range	33-88	33-76	2-53	7-38	0-23	—	12-27

<sup>a</sup> Total items selected as present by any of the five sources.

TABLE 2  
DISTRIBUTION OF TRUE, NOT SURE, AND VALID ITEMS SORTED BY MOTHERS AND FATHERS

	Mother		Father		Parents total	
	True	Not Sure	True	Not Sure	True	Not Sure
Percentage distribution of items into True and Not Sure	57.9	42.1	48.9	51.1	53.5	46.5
Percentage valid among items sorted into each category	79.6	57.4	83.9	52.9	81.5	55.0

Note.—Base = 491 True and 357 Not Sure items picked by mothers and 384 True and 401 Not Sure items picked by fathers.

thus decreasing the number of false negatives may be examined in Table 2. An average of 46.5% of the total items selected by both parents were put into the Not Sure category and as many as 55.0% of these items were judged by the research team to be valid items. Admittedly, the data provide only indirect evidence for increased yield in assessment, indicating only that a substantial number of valid items are placed in the Not Sure category. The assumption is made that, had we used only the True and False categories, many of the valid items would have been placed in the False category, increasing the number of false negatives.

This hypothesis was tested by having the last 14 parents sort again the items originally placed in the Not Sure category into either the True or False categories. The results of this forced-choice procedure, given in Table 3, show a substantial number of items from the Not Sure placed into the False category and, most important, close to half these items were judged as valid. In other words, it is likely

that the number of false negatives would have been substantially increased if the Not Sure category were omitted. These findings probably represent a lower boundary estimate of the effectiveness of the Not Sure category in reducing the number of false negatives, since the two-step sorting procedure utilized here would be expected to sharpen the respondents' accuracy and minimize errors of carelessness.

The effectiveness of the re-sort categories in reducing false negatives can be seen in Table 4. The Used To Be True category was introduced on the assumption that parents would consider some deviant behaviors which decreased in severity as having totally disappeared. Approximately one-third of the items selected by the parents as having disappeared were finally judged to be still present. In addition, about half of the items re-sorted from False to True categories were judged to be valid. This "recovery" of items initially sorted as False thus lowers the number of items underreported by each parent. The re-sort pro-

TABLE 3  
DISTRIBUTION OF TRUE, FALSE, AND VALID ITEMS AMONG ITEMS INITIALLY SORTED AS NOT SURE

	Mother		Father		Parents Total	
	Not Sure to		Not Sure to		Not Sure to	
	True	False	True	False	True	False
Percentage distribution of the Not Sure items into True and False	51.0	49.0	39.1	60.9	43.5	56.5
Percentage valid among items placed into each category	67.9	47.1	65.7	49.5	66.6	48.8

Note.—Base = 104 Not Sure items from mothers and 179 Not Sure items from fathers.

TABLE 4  
DISTRIBUTION OF VALID TRUE AND USED TO BE TRUE ITEMS BASED ON RE-SORT OF  
ITEMS INITIALLY SORTED AS FALSE

	Mother		Father		Parents Total	
	True	Used To Be True	True	Used To Be True	True	Used To Be True
Percentage valid among items re-sorted into each category	54.8	30.4	41.7	33.3	51.6	31.3
Percentage total decrease in false negatives for each parent after re-sort	43.4		14.4		27.6	

Note.—Base = 60 True and 160 Used To Be True items re-sorted by mothers and 34 True and 56 Used To Be True items re-sorted by fathers.

cedure seems most effective when administered to mothers, allowing for an average 43.4% reduction in false negatives.

#### *False Positives*

Two approaches were attempted to reduce the distorting effect of overreporting or false positives. First, the DBI items were written in as clear, simple, and unambiguous a form as possible. A content analysis showed that only 6% of the false positives—only 2.5% of all items picked—were due to unclear wording.<sup>2</sup>

The second approach was the use of an inquiry from five sources to identify the remaining false positives and eliminate them from the final valid assessment of the child's pathology. As indicated in Table 5, a substantial proportion of the 1,566 items en-

dorsed, 37.2% on the average, were judged by the research team to be false positives. Even if we examine only those items selected by parents as definitely True we find that about one-fourth of these items were judged to be invalid.

The following is a sample item endorsement which, based on the inquiry, was judged to be false positive: Item 179: Has taken money that does not belong to him. The mother and father had both endorsed this item as True. When questioned, the mother stated, "He lies, he's disobedient, he's a trouble maker and I'm sure that he steals. If he hasn't done so yet he probably will." On further probing, the mother could not provide any evidence of stealing. Similarly, the father could not provide any evidence of stealing. He said, "I don't know where I got the idea. I think my wife said that he steals but I don't know if she's just saying that or she has reason to. She's very hard on him." The child's teacher,

TABLE 5  
DISTRIBUTION OF FALSE POSITIVES AMONG THE FIVE SOURCES

	Mother	Father	Teacher	Home observer	School observer	Total <sup>a</sup>
Mean false positives	13.8	15.8	3.3	2.3	1.2	29.9
Percentage false positives among items picked as present (True or Not Sure)	28.0	37.0	19.1	20.2	12.6	37.2
Percentage false positives among items picked True	20.4	27.1				

<sup>a</sup> Total false positives contributed by any of the five sources.

who had known him for 2 years, reported no evidence of stealing nor any complaints from other children. The three judges decided, independently, that this was a false positive endorsement based on inference and related to something in the mother which compelled her to distort this aspect of her child's behavior.

Thus despite the clear, concrete wording of items and specific instructions, a substantial number of false endorsements were eliminated from the final assessment by independent judgments based on detailed inquiries.

### DISCUSSION

The major emphasis in the construction of the DBI and the development of procedures for administration and scoring has been on the problem of false endorsements, that is, on incompleteness and inaccuracy of reporting. It is apparent from our findings that despite all efforts to minimize the error due to false endorsements by reporters the residual error is of such magnitude as to seriously question the value of any behavioral assessment which does not take this into account.

While investigators have recognized this problem they have often tended to deal with it by arguments minimizing its importance rather than by procedures minimizing its effects. One such argument holds that insofar as items describe specific and concrete behaviors, respondents are making first-order observations rather than inferential judgments and one can accept these item endorsements as satisfactory descriptions of deviant behavior in children. Thus, Dreger et al. (1964) state,

As for the accuracy of the BCP respondents' perception, then, it is the Committee's hope—and in most cases judgment—that the BCP items describe sufficiently concrete behaviors that the parent could scarcely miss observing them [p. 7].

Our results indicate that despite the concreteness of the items used, parents still failed to pick as True a substantial number of items which were known from other sources to be present; conversely, of those items picked by parents as True, a substantial proportion were ultimately judged to be invalid.

A second argument maintains that all research is dependent on someone's perception,

and the attempt to distinguish between real deviant behavior and the perception of such deviancy is fruitless. Granted that data are percepts, the issue is whether more accurate perceptions may be obtained by going beyond the item endorsement of mothers. Although error will still exist, it is felt that the DBI procedures reduce it substantially and provide data closer to that which is hypothetically obtainable by an ideal trained observer.

According to a third argument, it is unnecessary to attempt to discriminate between deviant behavior in the child and over- or underreporting bias on the part of parents or teachers since empirical, statistical relationships have been found between reported deviant behavior in children and such variables as school adjustment and social class (Glidewell et al., 1959), age, sex, and race (Lapouse & Monk, 1964), and parental personality (Becker, 1960). Similarly, some investigators argue that the distinction between valid and invalid endorsements is of minimal importance since the parental report represents a "true picture of the mother-child relationship, an important part of the atmosphere in which the child develops his patterns [Macfarlane et al., 1954, p. 4]." These arguments would be more convincing if investigators did not draw substantive conclusions from the data. But it is obvious that few researchers are content to treat their results as reports, and conclusions are usually drawn concerning the behavior supposedly present in the child. For example, Dreger et al. (1964), after administering his deviant behavior inventory to a large sample of mothers, factor analyzes the data and describes the obtained factors as "dimensions of child emotional disorders." Lapouse and Monk (1964) similarly make the jump from report of deviant behaviors to actual presence of deviancy in the child when they conclude from their data that younger school-aged children, Negro children, and boys, as subgroups, show the most deviancy from prevailing behavioral norms.

Our position is that the importance of distinguishing between valid and invalid item endorsement cannot be argued away. If maximally useful information is to be obtained from behavior inventories, invalid endorse-

ments must either be identified as error to be eliminated from the data, or studied as data in its own right, examining, for example, the relation between those areas of deviancy within the parent which are denied, repressed, or projected and areas of child deviant behavior over- or underreported by that parent.

The elimination of invalid endorsement is particularly crucial in the evaluation of change in the course of psychotherapy. Insofar as measurement of the child's behavior is considered an appropriate test of the effectiveness of treatment, the use of symptom list endorsements by mothers as a measure of change may be misleading and erroneous. For example, the mother may vastly underreport the child's deviancy at intake, while at reassessment she may provide an accurate picture of the child's pathology. Central to this concern is the suspicion that these errors are not only substantial, but that the degree of error is not constant. We would hypothesize that this error varies significantly (*a*) between types of reporter populations such as parents of clinic and nonclinic children, thus seriously affecting case comparability of data; (*b*) between respondents on any one case, thus affecting intersource agreement figures; and, most important, (*c*) within respondents at different points of time, such as pre- and posttherapy, thus seriously distorting real changes in the symptom pattern over time.

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- On the Diagnosis of Homosexuality from the Rorschach: Marvin R. Goldfried\*: Psychological Services, State University of New York at Stony Brook, Stony Brook, Long Island, New York.
- The Use of Behavioral Techniques in a Case of Compulsive Stealing: Ralph Wetzel\*: Department of Psychology, The University of Arizona, Tucson, Arizona.
- The Transfer of Treatment: Peter J. Lang\*: Department of Psychology, The University of Wisconsin, Madison, Wisconsin 53706.
- Comments on Wetzel's Treatment of a Case of Compulsive Stealing: James A. Dinsmoor\*: Department of Psychology, Indiana University, Bloomington, Indiana.
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